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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,880	03/04/2002	Mayan Moudgill	YOR9-2001-0204US1 (8728-	6258
22150	7590	05/09/2006	EXAMINER	
F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			TSAI, HENRY	
			ART UNIT	PAPER NUMBER
			2181	

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/087,880

**Applicant(s)**

MOUDGILL, MAYAN

**Examiner**

Henry W.H. Tsai

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-15,18 and 19 is/are pending in the application.
- 4a) Of the above claim(s)      is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,4-9,15,18 and 19 is/are allowed.
- 6) ☒ Claim(s) 10-14 is/are rejected.
- 7) ☐ Claim(s)      is/are objected to.
- 8) ☐ Claim(s)      are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on      is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No.     .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>    </u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>    </u> | 6) <input type="checkbox"/> Other: <u>    </u>  |

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**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 10, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Tremblay et al. (U.S. Patent Application Publication No. 2001/0042190) (hereafter referred to as Tremblay et al.'190).

Referring to claim 10, Tremblay et al.'190 discloses, as claimed, a system for processing an instruction in a microprocessor, comprising: a plurality of clusters (MFU1 622, MFU2 624, MFU3 626, and GFU 620, see Fig. 6) having at least one

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functional unit (see Paragraph 0064, lines 4-6) for executing the instruction; and a plurality of register files (610, 61, 614, and 616, see Fig. 6) having a predetermined number of physical registers (96 global registers and 32 local register, see Fig. 6) to and from which data is written and read in accordance with the instruction, wherein each of the register files (610, 61, 614, and 616, see Fig. 6) has one write port (the write port for the corresponding 32 local register in each register file, see Fig. 6, and see also paragraph 0064, lines 14-16, regarding that the local registers are read and written only by a functional unit associated with a particular register file segment) to which an output of a corresponding cluster (MFU1 622, MFU2 624, MFU3 626, and GFU 620, see Fig. 6) is connected, and data write operation in accordance with the instruction executed by the at least one functional unit (see Paragraph 0035, lines 9-13) is performed by accessing the physical registers of the plurality of register files, and wherein each of the plurality of register files (610, 61, 614, and 616, see Fig. 6) has at least one read port (the read port for the corresponding 96 global register in each register file, see Fig. 6, and paragraph 0064, lines 13-14, regarding that the global registers are read and written by all functional units) from which any of the plurality of clusters can read data (see

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paragraph 0064, lines 13-14, regarding that the global registers are read and written by all functional units).

As to claim 11, Tremblay et al.'190 also discloses: the at least one cluster includes multiple functional (MFU1 622, MFU2 624, and MFU3 626, see Fig. 6, see also paragraph 0035, lines 11-17, regarding the MFU (media functional unit) is multiple single-instruction-multiple-datapath (MSIMD) media function units) each for executing different instructions.

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tremblay et al.'190 in view of Levy et al.

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(U.S. Patent Application Publication No. 2001/0004755)

(hereafter referred to as Levy et al.'755).

Tremblay et al.'190 discloses the claimed invention except for: means for renaming architected registers of the instruction with the physical registers of each of the plurality of register files (claim 12);

the architected registers are target registers in which a result of the instruction is stored (claim 13); and

at least one issue-queue units associated with the plurality of the clusters, an issue-queue unit for holding instruction renamed by the means for renaming until the instruction is issued to be executed (claim 14).

Levy et al.'755 shows: means for renaming architected registers (Register Handler 28, see Fig. 9) of the instruction with the physical registers of each of the plurality of register files;

the architected registers (such as Ar1 and AR2 in Fig. 9) are target registers in which a result of the instruction is stored; and

at least one issue-queue units (see FP instruction queue 32; and Integer instruction queue 30 in Fig. 1) associated with the plurality of the clusters, an issue-queue unit (see FP instruction queue 32; or Integer instruction queue 30 in Fig. 1)

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for holding instruction renamed by the means for renaming  
(Register Handler 28, see Fig. 9) until the instruction is  
issued to be executed (see EXEC stage 54 in Fig. 2) in one of  
the plurality of clusters.

Tremblay et al.'190's system does not explicitly show using  
renaming registers. Register reference delay is a bottleneck in  
the system using a lot of registers inside the register files.  
Using the renaming registers for dynamic instruction scheduling  
and dynamic allocating the registers will significantly improve  
the Tremblay et al.'190's system performance..

It would have been obvious to one having ordinary skill in  
the art at the time the invention was made to modify Tremblay et  
al.'190's system to comprise: means for renaming architected  
registers of the instruction with the physical registers of each  
of the plurality of register files (claim 12); the architected  
registers are target registers in which a result of the  
instruction is stored (claim 13); and at least one issue-queue  
units associated with the plurality of the clusters, an issue-  
queue unit for holding instruction renamed by the means for  
renaming until the instruction is issued to be executed (claim  
14), as taught by Levy et al.'755, in order to facilitate  
dynamic instruction scheduling for reorder or parallel  
operations to increase the processor performance for the

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Tremblay et al.'190's system (see paragraph 0003, lines 1-3, and lines 8-11).

***Allowable Subject Matter***

5. Claims 1, 4-9, 15, 18, and 19 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: Tremblay et al.'190 and Levy et al.'755, the closest references, and the other prior art do not teach or fairly suggest: each of the register sub-files is associated with a corresponding one of the clusters (in claim 1, and claim 15 recites the corresponding limitation). Further the combination of the above limitations with all of the other limitations in the respective independent claims is not obvious.

***Response to Amendment***

7. Applicant's arguments filed 2/3/06 have been fully considered but they are not deemed to be persuasive.

Applicant argues that "although the global registers can be read from and written to by all functional units, the local



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registers can be read from and written to by only the functional unit associated with the particular register file segment. Thus, Tremblay includes register segments that cannot be read by any of the plurality clusters, contrary to the recitation of claim 10." (page 7, last three lines and page 8, lines 1-2) Examiner disagrees with Applicants. Note "the local registers can be read from and written to by only the functional unit associated with the particular register file segment" does not mean "Tremblay includes register segments that cannot be read by any of the plurality clusters, contrary to the recitation of claim 10". Applicant's argument is moot.

As set forth in the are rejection above, Tremblay et al.'190 discloses: each of the register files (610, 61, 614, and 616, see Fig. 6) has one write port (the write port for the corresponding 32 local register in each register file, see Fig. 6, and see also paragraph 0064, lines 14-16, regarding that the local registers are read and written only by a functional unit associated with a particular register file segment) to which an output of a corresponding cluster (MFU1 622, MFU2 624, MFU3 626, and GFU 620, see Fig. 6) is connected, and data write operation in accordance with the instruction executed by the at least one functional unit (see Paragraph 0035, lines 9-13) is performed by accessing the physical registers of the plurality of register

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files, and wherein each of the plurality of register files (610, 61, 614, and 616, see Fig. 6) has at least one read port (the read port for the corresponding 96 global register in each register file, see Fig. 6, and paragraph 0064, lines 13-14, regarding that the global registers are read and written by all functional units) from which any of the plurality of clusters can read data (see paragraph 0064, lines 13-14, regarding that the global registers are read and written by all functional units). Tremblay et al.'190 anticipates the claimed invention.

### **Conclusion**

8. This is a RCE of applicant's earlier Application No. 10/087,880. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this

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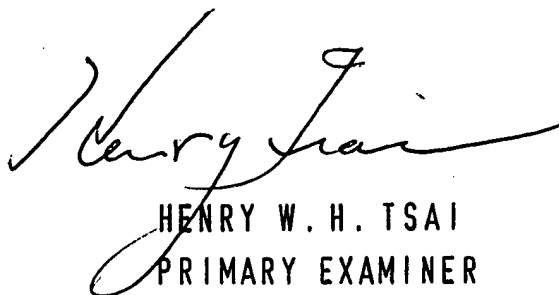
action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

#### ***Contact Information***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Henry Tsai whose telephone number is (571) 272-4176. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner supervisor, Fritz M. Fleming, can be reached on (571) 272-4145. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC central telephone number, 571-272-2100.

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10. In order to reduce pendency and avoid potential delays, Group 2100 is encouraging FAXing of responses to Office actions directly into the Group at fax number: 571-273-8300. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2100 will be promptly forward to the examiner.

  
HENRY W. H. TSAI  
PRIMARY EXAMINER

May 1, 2006